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ABSTRACT

This report is a condensation of an unpublished paper by Daniel Dreyfus, a member of the professional staff of the Committee on Interior and Insular Affairs. Dreyfus develops a classification system of environmental management activities which has as its purpose to partially remove the present disagreement upon the scope of environmental management and lack of commonly accepted definitions of its concepts. (Author/CP)

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A DEFINITION OF THE SCOPE
OF
ENVIRONMENTAL MANAGEMENT

PREPARED AT THE REQUEST OF

HENRY M. JACKSON, *Chairman*
COMMITTEE ON INTERIOR AND
INSULAR AFFAIRS
UNITED STATES SENATE

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MEMORANDUM OF THE CHAIRMAN

To Members of the Senate Committee on Interior and Insular Affairs:

With the recent enactment of the National Environmental Policy Act of 1969 (Public Law 91–190), a new concept of planning and management is emerging within the Federal Government. In the future, Government will be called upon to recognize the interrelationships of the life support system which is the environment and will need to adopt a systems approach for the management of governmental activities which have environmental impacts.

There is now a need to arrive at commonly accepted definitions of the concepts involved in environmental management. As in any systems study, the initial objective must be to define the boundaries of the system itself. There is no present agreement upon the scope of environmental management, and discussion among those who are interested in the field will be necessary to evolve one. This report is offered as one basis for the discussion.

The material herein is a condensation of an unpublished paper by Mr. Daniel Dreyfus, a member of the professional staff of the Committee on Interior and Insular Affairs.[1] It develops a classification system of environmental management activities. Because of the inquiries which the committee has received relating to this subject and the interest which has been evidenced in the paper, I have directed that the paper be reproduced as a committee print so that it will be readily available to the interested parties.

HENRY M. JACKSON, *Chairman.*

[1] Prepared for a seminar in governmental administration under the direction of Dr. Lowell H. Hattery at the American University, January 1969.

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INTRODUCTION

If the implementation of a national policy for the environment is to be effective throughout the Federal administrative establishment, it must be founded upon a clear definition of the scope of activities, particularly Federal activities, which are within the purview of the policy. Federal efforts to manage the environment must be designed to influence the performance of a wide variety of programs without unnecessarily adding to the administrative burden or disrupting the effectiveness of Federal functions. The programs which are involved must be identified with precision so that they can be integrated into the design of the environmental management mechanism.

In the broadest sense of the term, "Environmental Policy" would encompass the entire body of Federal law from the Constitution to the least significant administrative ruling. "Environmental Management" might include every action of Government. Obviously, operational definitions must be devised which are considerably narrower in scope than this broadest concept. There is a need to approach the work of the Federal Government with regard to the system of the physical environment, but if this approach is to be valuable it cannot be too diffuse. Attention must be concentrated upon those aspects which have important implications for the environmental system. An operational definition of environmental management must be developed which encompasses those aspects of Federal action in which environmental considerations are paramount. It might further extend to areas of action in which environmental considerations are significant to decisionmaking. It cannot extend to every area of action in which any environmental consideration is involved.

THE ENVIRONMENTAL MANAGEMENT CONCEPT

In recent years, concern for the impacts of population growth and technological advances upon the environment has been growing among political and scientific leaders and among the public at large. There has been a growing realization that every impact which our actions have upon the environment will inevitably affect the conditions of our existence. There is clear evidence that ill-considered actions of Government and industry have sometimes had disastrous environmental consequences which initially were neither appreciated nor controlled. There is growing awareness of the costs which we have incurred by past actions and growing fear of the possible irreversible damages from future actions.

Until recently, Government activities to manage the environment have taken the form of problem-oriented, single-purpose programs. Many of these activities have been initiated in response to the sense of urgency brought about by critical conditions. The efforts at the Federal, State, and local levels to achieve control over air and water pollution are examples.

More recently, the comprehensive nature of the problem has been recognized. The environment is a physical system with intricate interrelationships among its factors. Control of air pollution has implications for water quality—witness the tradeoff of air pollution for thermal pollution as nuclear power plants are substituted for fossil fuel plants. Patterns of land use significantly influence nearly all environmental pressures. No single aspect of environmental management can be treated separately from the others. Environmental management is a system analysis task.

Many Federal departments and agencies have recognized the comprehensive nature of the problem and have established high-level staff positions or groups to provide an overview of the environmental aspects of actions within their jurisdiction. The Departments of the Interior and Transportation and the Federal Power Commission are examples. Many State governments are considering the establishment of environmental policy groups. California and New York, for example, are taking such action.

The most significant action at the Federal level has been the enactment of the National Environmental Policy Act which was approved on January 1, 1970. The provisions of this measure will establish the environment as a top-level organizational and managerial concept in the executive branch. It is clear that the future will find public administration focusing on environmental management to an ever greater degree.

DEVELOPMENT OF AN OPERATIONAL DEFINITION OF ENVIRONMENTAL MANAGEMENT

Thus far, there exists no recognized discipline which is concerned with environmental science or environmental management in a comprehensive sense. There are many diverse disciplines which consider some aspect of environmental study and control to be within their purview. They include architecture, engineering, biology, ecology, meteorology, and many others. Because each of these disciplines concentrates on only a part of the environmental system, there are few comprehensive statements or classifications of environmental programs, activities, effects, or conditions found in the literature. There is, however, a significant body of published commentary upon environmental management.

One approach to developing an operational definition of the scope of environmental management is to survey the commentaries of those who are interested in the field for indications of what they perceive the boundaries of the environmental system to be. The classification system presented in this report is based upon such a survey. The principal document used was the transcript of the "Joint House-Senate Colloquium to discuss a National Policy for the Environment," which was held in Washington, D.C., in 1968.[1] This document encompasses the most explicit collection of commentaries on the subject which is available. Other sources listed in the bibliography to this report were also screened.

The literature was searched for indicator words or phrases. Mention of any specific area of environmental concern, examples of environmental problems, discussions of existing or proposed programs, or other indicators were noted for which the context appeared to show that the author considered the item to be within the scope of the environmental system. The indicators were collected without regard to frequency of occurrence and without any preestablished classification system.

A rough classification system was then devised and additional indicators added until the rate of discovery became insignificant. The indicators varied in character. Some were objectives to be sought (i.e., community identity, tranquillity, diversity of experience); some were programs which exist or are thought to be desirable (i.e., recycling of resources, highway beautification, population planning); the majority were expressions of environmental problems or problem indicies (i.e., population impaction, sonic boom, rural slums, soil exhaustion, oil spills, excessive stimuli, erosion of quality). Many of the indicators were difficult to characterize (i.e., economics of values, biochemical processes); and perhaps were useful only for their connotations. The

[1] U.S. Senate, "Joint House-Senate Colloquim To Discuss a National Policy for the Environment," 90th Cong., second sess. (Washington: Government Printing Office, 1968)

groupings which were immediately apparent were those of problems, goals, and programs. It is possible, of course, to redefine a problem in terms of a goal or vice versa, and to associate either with a program (existing or potential). It is also possible to describe programs in terms of problems or goals.

The objective of the classification system being designed was the identification of Federal activity within the scope of environmental management. The indicators, therefore, were sorted accordingly to a classification which was program or activity oriented.

Inspection of the indicators further revealed that many of them, particularly those associated with the science of ecology, were extremely broad in scope (i.e., behavior of organisms—loss of ecosystems). It was necessary, therefore, to consider the intent of the commentators in expressing the scope of environmental management in such terms.

The commentary indicates that a certain group of Federal programs or activities are clearly considered to be concerned with aspects of environmental management. Environmental factors are perceived to be paramount objectives in policy formulation and decisionmaking for these activities. Some of these activities, such as the Federal water pollution control program, were initiated as a result of recognized problems which are primarily environmental. Other programs, such as the Federal hydroelectric power programs, may have had different geneses, but in their present state they are, in the view of many commentators, clearly and intimately associated with environmental factors.

A national policy for the environment, if it is to be effective, would need to have an operational impact upon such programs. Environmental management might be expected to change or reinforce the program goals, set objectives, perhaps result in redirection of effort. It would do so in an immediate and continuing manner.

With regard to such programs, environmental management implies procedures for coordination, review, or control of decisions and ongoing activities. For policy implementation to be effective, the scope of such strong influence must be limited as much as possible.

Fortunately, environmental management need not be so strongly concerned with the entire range of activities having environmental implications. A second group of activities may be identified which also are considered to include factors of environmental interest or concern. These factors, however, are not paramount in establishing the program objectives and making program decisions, and at present the activities are not perceived to be related to critical environmental problems.

Environmental management therefore, would not be expected to have any substantial, immediate, and continuing impact upon such activities. There would be no need for intimate coordination or for control over decisions and objectives. Many of the Federal military programs might be placed in this group.

In order to adequately influence the environmental aspects of programs involving activities in this second group, only a monitoring or surveillance mechanism would be required. Review of major decisions or new directions in program activities would provide an opportunity for the consideration of the environmental implications of actions.

Influence over the actions could be provided through opportunities to comment to decisionmakers or, in critical cases, to appeal decisions to higher authorities.

A third group of activities is brought within the scope of environmental management particularly through the broad purview of the discipline of ecology. These are the data-collecting and research activities which may shed light upon environmental problems—present or potential—and their solutions. Examples are the mineral survey programs of the Geological Survey and the data-gathering and research programs of the Weather Bureau. Although environmental management would be expected to have an immediate and continuing impact upon the conduct of such programs, they can be managed by means other than control. The most important consideration would be communication of data and of needs for data.

Data developed by the programs must be made available for application to environmental problems and decisions. Gaps in the necessary data collection and research for environmental management must be closed by offering advice to the agencies performing the studies and perhaps by making financial support available.

In summary, the scope of environmental management can be qualified by defining three groups of activities or programs upon which environmental management will have varying degrees of influence:

1. Activities with environmental management objectives.
2. Activities with aspects requiring environmental surveillance and review.
3. Activities which include environmental research and data collection.

The indicator words and phrases provided a basis to construct a system of classification of activities which are related to one or more of the groups listed. The construction of such a classification system required the translation of all of the indicators into activity terms. For example, "Hospitality for Intellectual Needs" is an objective which might be characterized by an activity of "Cultural Stimulation." "Endangered Species" is a problem which can be encompassed within the activity of "Fish and Wildlife Conservation."

In addition to the translation of indicators, construction of the classification system required a logical division of activities and the subdivision or combination of indicators into appropriate classes. It also required the addition of activity names which were necessary to round out the structure of the classification and the judicious elimination of indicators which occurred infrequently and were widely separated from other categories.[2]

Table I presents a classification of activities which are considered to be within the scope of environmental management based upon the analysis described.

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[2] The only categories of indicators which were eliminated were "social justice" and "welfare." The indicators involved only occurred in a few instances, the context left doubt as to the user's intent to define them as environmental activities, and their inclusion would broaden the scope of the problem tremendously.

TABLE I—CLASSIFICATION OF ACTIVITIES WITHIN THE SCOPE OF ENVIRONMENTAL MANAGEMENT

I. RENEWABLE RESOURCES CONSERVATION

A. Pollution control:
   1. Air pollution control.
   2. Water pollution control.
B. Agriculture:
   1. Agricultural production research and assistance.
   2. Agricultural soil conservation.
C. Water resources conservation:
   1. Water supply.
   2. Water quality control.
   3. Saline water conversion.
D. Land management:
   1. Public land use management.
   2. Watershed management.
   3. Forestry research and management.
   4. Wetland and estuary conservation.
E. Marine resources conservation:
   1. Oceanography.
   2. Commercial fishery conservation.
F. Atmospheric sciences:
   1. Basic meteorology.
   2. Weather modification.
G. Space exploration and research:
   1. Space research.
   2. Space vehicle construction and operation.

II. NONRENEWABLE RESOURCES CONSERVATION

A. Urban land utilization:
   1. Urban planning.
   2. Urban redevelopment.
   3. Urban public recreation.
   4. Utility engineering and construction.
   5. Zoning.
B. Nonurban land utilization:
   1. Surveying and mapping.
   2. Rural community stabilization, planning, and development.
   3. New city planning and development.
C. Transportation:
   1. Urban transit planning and development.
   2. Highway planning, safety, and beautification.
   3. Air transport planning and development.
   4. Marine and inland waterway transport planning and development.
   5. Traffic control and safety.
   6. Railroad regulation and safety.

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D. Energy:
1. Thermal-electric plant siting, design, and operation.
2. Electric power transmission line siting, design, construction, and operation.
3. Fossil fuel exploration, inventory, and research.
4. Heat utilization and dispersion.
5. Nuclear power research, development, and operation.
6. Hydroelectric power research, development, and operation.

E. Mineral resources conservation:
1. Mineral exploration and inventory.
2. Materials research and development.
3. Solid waste storage, recycling, and disposal.
4. Mining technology research and development.
5. Mineral extraction research and development.

III. ENVIRONMENTAL HEALTH AND WELL-BEING

A. Physiological health and well-being:
1. Sanitation.
2. Radiation control.
3. Industrial and domestic health and safety.
4. Environmental health protection.
5. Contagious disease control.
6. Pest control.
7. Food and drug regulation.
8. Flood control.
9. Natural disaster warning and relief.
10. Population control.

B. Psychological health and well-being:
1. Noise suppression.
2. Relief of acoustic, mechanical, and interpersonal tension stresses.
3. Promotion of community identity.
4. Population dispersion.
5. Environmental education.

IV. PROMOTION OF AMENITIES

A. Outdoor recreation:
1. Public recreation, planning, and development.
2. Wild lands preservation.
3. Sport fish and wildlife conservation.
4. Conservation and promotion of natural beauty.

B. Cultural stimulation:
1. Urban beautification.
2. Historic preservation.
3. Enhancement of architectural and engineering design.
4. Maintenance of continuity of environmental associations.
5. Provision for diversity of experience and life style.

V. ECOLOGICAL RESEARCH

A. Human ecology:
1. Basic research in human ecology.

DISCUSSION OF THE CLASSIFICATION SYSTEM

The classification system, shown in table I, groups the activities generally according to the nature of environmental problems involved. The two major headings entitled "Renewable" and "Nonrenewable Resources Conservation" are based upon concepts which have been commonly used in regard to natural resource conservation. The earliest movements for Federal action regarding the environment were associated with fears of exhaustion of resources and led to the renewable resources concepts of forest management and agricultural practices. Later, fears for exhaustion of nonrenewable mineral resources led to Federal exploration and inventory programs and research into extraction processes.

Separation of resources into renewable and nonrenewable categories must, of course, be somewhat arbitrary. Soil, for example, can be misused to the point where reclamation is impracticable.

The third major category, "Environmental Health and Well-being," centers around the well-established governmental function of public health. This field certainly reflects some of man's earliest environmental concerns such as sanitation and contagious disease. It has traditionally been differentiated from natural resources, although often, as in water supply matters, the division line is not easily defined.

In this classification, traditional public health concerns have been expanded by the addition of concerns for physiological and psychological factors in the environment which appear to have effects at least bordering on the pathological.

The fourth category, "Promotion of Amenities," includes some of the most recent areas of concern in the environmental field. These activities are those having environmental implications which, although not essential to the continued healthy existence of man under conditions of tolerable stress, are vital to the achievement of a higher quality of intellectual and cultural existence.

The fifth category, "Ecological Research," is necessary to characterize programs, particularly of a data-gathering nature, which are so broad in scope and implication for environmental matters that they would be involved in many categories without any clearly defined emphasis. An example of such a program is the earth resources observation satellite program of the Environmental Sciences Services Administration.

Many of the activities listed have implications in more than one category. For example, air transport has important implications with regard not only to nonrenewable resource conservation (land use), but also to renewable resources (air pollution), environmental health and well-being (noise suppression), and promotion of amenities (intrusion over wilderness areas).

It is not possible to devise a classification system in which each activity lies exclusively within a single heading unless the activities are subdivided into extremely narrow classes. If numerous narrow classes of activities are utilized, the system becomes more difficult to comprehend in its entirety and thus less useful as a definition of the scope of the problem. Furthermore, as the activity classes are made narrow, a specific program will encompass more of them. Broad activity classes, therefore, are used to retain ease of comprehension and to afford less complex relations among activity classes and programs.

An alternative method of grouping broad activity classes would be to include the activity under every heading in which it has implications. This method would provide a more rigorous classification scheme, but would extend and complicate the format of the listing.

Each activity, therefore, is listed under the heading which is deemed to reflect its most significant attributes or which contains other very closely related activities. It is recognized that each activity may have implications within other headings.

The list of activities in table I which are numbered with Arabic numerals is considered to encompass the scope of environmental management. The headings under which activities are grouped are intended merely to provide a useful format for sorting and considering data. No analytical power is claimed for the heading scheme.

FEDERAL PROGRAMS WITHIN THE SCOPE OF ENVIRONMENTAL MANAGEMENT

In order to test the utility of the classification system, a preliminary survey of Federal programs was made. The compilation was developed from available published data. The appendix to the "Budget of the United States Government" for fiscal year 1969 was used as a basic comprehensive list of existing Federal programs. The budget list was supplemented by various more detailed program descriptions.

Programs were collected on cards. Each program was coded with (1) the outline identification for the activities in the classification system with which it is related and (2) a code number for each activity reflecting the degree of influence which environmental management would have upon it. The descriptions of degrees of influence which were developed earlier were restated in terms of the program attributes as follows:

Code	*Description*
1.	Program involves planning, construction, operation or management, regulatory, or licensing functions (or grants or loans for such functions) which have significant and recurring implications with the environmental activity cited.
2.	Program involves planning, construction or management, regulatory, or licensing functions (or grants or loans for such functions) which have implications with the activity cited, but significant implication is infrequently an important factor in program administration.
3.	Program involves data gathering or research which is relevant to the activity cited.

The format of a typical card follows:

```
II C2—1   Highway Beautification
IV B3—1
III B2—1  Federal Highway Administration, Department of
            Transportation.
```

In the upper left corner, the activities associated with the program are noted. The first entry, II C2, relates to the activity classification system:

II. NONRENEWABLE RESOURCES CONSERVATION

C. Transportation:

2. Highway planning, safety, and beautification.

The number after the dash indicates the degree of influence which environmental management would be expected to have on the program as a result of its implications with this activity. In this example the number 1 indicates that environmental considerations are quite significant and a high degree of environmental management involvement exists. The top line of the text is the program title or identification. The lower lines are the administering agency identification, in this case the administration and department.

The identification of program entities was made complicated by the lack of uniformity among the agencies' designation of programs. In some agencies, notably the newly organized ones, program designations are derived from the enabling legislation provisions. Where the legislation is recent and uncomplicated by amendments, the program designations tend to be objective oriented, clearly differentiated, and easily associated with the activity classification system.

The older agencies which operate under a cumulative body of law and regulation, however, tend to have multiple-purpose programs without clearly differentiated objectives. The program designations used by these agencies for budget purposes are often arbitrary. They may separate planning and construction, for example, where both of these activities are associated with the same spectrum of activities.

As a result, some programs have significant implications for a large number of activities, while others are much narrower. This complexity is not considered to be a serious problem for the purposes of this classification. If the programs are managed as cohesive entities, they will have to be considered as entities for purposes of environmental management also. The complexity of some programs may be an important factor in design of the environmental management mechanism, but the inconsistency in program scope does not adversely affect the usefulness of the classification system.

The following general guides for assessing programs were developed:

1. Each program was examined to determine if it has implications for the activities listed in the classification system. If a significant implication was believed to exist, the activity was noted as well as the code number describing the degree of influence (or nature of implication).

2. If the activity is only incidental to the objectives of the program, and the performance of the activity within the program is not a significant portion of the national scope of the activity, the implication was not noted. For example, the administration of military installations includes water supply activities. However, these activities are neither a significant factor in the objectives of the military installation program nor in the national water supply activity as a whole. The implication, therefore, was not noted.

3. Where a program has implications regarding a large number of activities (for example, construction of large water storage reservoirs), it was only necessary to note the activities which are most significantly involved in the program's objectives. The interrelationship of activities in the classification is recognized, and environmental management of the program regarding a number

of major activities would also provide for the less significant implications.

4. For the purposes of this study, only domestic programs were considered.

RESULTS

This preliminary review of existing Federal programs resulted in a set of cards for about 150 programs. The number is not significant, of course, because of the lack of any uniform definition of a program. In some instances, the agency objective was sufficiently well defined and homogeneous that the agency and program were synonymous (i.e., Federal Crop Insurance Corporation). Other agencies encompassed many programs.

A list of the agencies which administer the programs was compiled from the cards (see table II). This list provides insights into the magnitude of the coordination and control, surveillance, and data gathering and research efforts which will be necessary to implement a program of environmental management.

In all, 63 Federal agencies included within 10 of the 13 executive departments, as well as 16 of the independent agencies were found to have programs within the scope of environmental management.

Table II repeats the activity classification of table I with the agencies which have relevant programs listed under each activity. For each agency, the code or codes are noted indicating the degree of implication which environmental management has for the agency's programs. It is important to note that the data were collected by program. There may be a number of programs involved within each listed agency, and a particular agency also may have programs which are not involved with environmental management. The use of agency names in table II simply provides indications of the results without the significantly greater sorting and listing necessary to transfer the programs from cards to tabular form.

The sole activity in the classification system for which no program was identified was that of:

II. NONRENEWABLE RESOURCES CONSERVATION

A. Urban land utilization.

5. Zoning.

Land-use zoning has traditionally been a responsibility of local government, and it is not surprising that no Federal program is established with zoning as an objective. Increasingly, however, zoning as a tool of land-use planning is being discussed as a primary means for environmental control. Indirect Federal action has been suggested regarding flood plain zoning and coastal zone management. The zoning activity therefore appears to be a valid activity and a possible indication of a need for new programs.

TABLE II.—PRELIMINARY COMPILATION OF AGENCIES WHICH ADMINISTER PROGRAMS WITHIN THE SCOPE OF ENVIRONMENTAL MANAGEMENT

ACTIVITY CLASSIFICATION

I. RENEWABLE RESOURCES CONSERVATION

	Implications [1]
A. Pollution control:	
1. Air pollution control:	
(*a*) Public Health Service, Health, Education, and Welfare	1, 3
(*b*) Research and Development, Department of Defense	2
2. Water pollution control:	
(*a*) Federal Water Pollution Control Administration, Department of the Interior	3, 1
(*b*) Farmers Home Administration, Department of Agriculture	1
B. Agriculture:	
1. Agricultural production research and assistance:	
(*a*) Tennessee Valley Authority	1, 3
(*b*) Bureau of Reclamation, Department of Interior	1, 3
(*c*) Farmers Home Administration, Department of Agriculture	2
(*d*) Statistical Reporting Service, Department of Agriculture	3
(*e*) Economic Research Service, Department of Agriculture	3
(*f*) Extension Service, Department of Agriculture	1, 3
(*g*) Cooperative State Research Service, Department of Agriculture	3
(*h*) Agricultural Research Service, Department of Agriculture	3
2. Agricultural soil conservation:	
(*a*) Bureau of Reclamation, Department of Interior	1, 3
(*b*) Geological Survey, Department of Interior	3
(*c*) Bureau of Indian Affairs, Department of Interior	1
(*d*) Farmers Home Administration, Department of Agriculture	2
(*e*) Agricultural Stabilization and Conservation Service, Department of Agriculture	1
(*f*) Soil Conservation Service, Department of Agriculture	1, 3
C. Water resources conservation:	
1. Water supply:	
(*a*) Water Resources Council	3
(*b*) Office of Water Resources Research, Department of Interior	3
(*c*) Federal Water Pollution Control Administration, Department of Interior	3
(*d*) Bureau of Reclamation, Department of Interior	1, 3
(*e*) Geological Survey, Department of Interior	1, 3
(*f*) Corps of Engineers, Department of Defense	1, 3
(*g*) Farmers Home Administration, Department of Agriculture	1, 2
(*h*) Agricultural Stabilization and Conservation Service, Department of Agriculture	1
(*i*) Soil Conservation Service, Department of Agriculture	1

[1] The agency administers programs which have the following implications to the environmental activity:
1=Continuous significant functions requiring control and coordination.
2=Occasional significant functions requiring surveillance.
3=Relevant data collection and research functions.

	Implications
C. Water resources conservation—Continued:	
2. Water quality control:	
(*a*) Water Resources Council	3
(*b*) Tennessee Valley Authority	1
(*c*) Office of Water Resources Research, Department of Interior	3
(*d*) Federal Water Pollution Control Administration, Department of Interior	3
(*e*) Bureau of Reclamation, Department of Interior	1, 3
(*f*) National Park Service, Department of Interior	1
(*g*) Geological Survey, Department of Interior	3
(*h*) Public Health Service, Health, Education, and Welfare	1, 3
(*i*) Corps of Engineers, Department of Defense	1, 3
3. Saline water conversion:	
(*a*) Water Resources Council	3
(*b*) Office of Saline Water, Department of Interior	1, 3
(*c*) Bureau of Reclamation, Department of Interior	1, 3
(*d*) Office of Business Economics, Department of Commerce	3
D. Land Management:	
1. Public land use management:	
(*a*) Federal Field Commission for Development Planning in Alaska	1
(*b*) National Park Service, Department of Interior	1
(*c*) Bureau of Sport Fisheries and Wildlife, Department of Interior	1
(*d*) Bureau of Mines, Department of Interior	1, 3
(*e*) Geological Survey, Department of Interior	3
(*f*) Office of Territories, Department of Interior	1
(*g*) Bureau of Outdoor Recreation, Department of Interior	1
(*h*) Bureau of Indian Affairs, Department of Interior	1
(*i*) Bureau of Land Management, Department of Interior	1
(*j*) Forest Service, Department of Agriculture	1
2. Watershed management:	
(*a*) Water Resources Council	3
(*b*) Geological Survey, Department of Interior	3
(*c*) Soil Conservation Service, Department of Agriculture	1
3. Forestry research and management:	
(*a*) Tennessee Valley Authority	1
(*b*) Bureau of Indian Affairs, Department of Interior	1
(*c*) Bureau of Land Management, Department of Interior	1
(*d*) Cooperative State Research Service, Department of Agriculture	3
4. Wetland and estuary conservation:	
(*a*) U.S. Coast Guard, Department of Transportation	1
(*b*) Bureau of Sport Fisheries and Wildlife, Department of Interior	1
(*c*) Bureau of Commercial Fisheries, Department of Interior	3
(*d*) Geological Survey, Department of Interior	3
(*e*) Corps of Engineers, Department of Defense	1, 3
E. Marine resources conservation:	
1. Oceanography:	
(*a*) National Science Foundation	3
(*b*) U.S. Coast Guard, Department of Transportation	3
(*c*) Bureau of Mines, Department of Interior	1, 3
(*d*) Department of Defense	2
(*e*) Environmental Science Services Administration, Department of Commerce	3
2. Commercial fishery conservation:	
(*a*) National Science Foundation	3
(*b*) Department of State	1, 3
(*c*) Bureau of Commercial Fisheries, Department of Interior	1, 3

	Implications
F. Atmospheric sciences:	
1. Basic meteorology:	
(a) National Aeronautics and Space Administration	3
(b) U.S. Coast Guard, Department of Transportation	3
(c) Department of Defense	2
(d) Environmental Science Services Administration, Department of Commerce	3
2. Weather modification:	
(a) Water Resources Council	3
(b) Bureau of Reclamation, Department of Interior	1, 3
(c) Department of Defense	2
G. Space exploration and research:	
1. Space research:	
(a) National Aeronautics and Space Administration	3
(b) Environmental Science Services Administration, Department of Commerce	3
2. Space vehicle construction and operation:	
(a) National Aeronautics and Space Administration	2

II. NONRENEWABLE RESOURCES CONSERVATION

A. Urban land utilization:	
1. Urban planning:	
(a) National Capital Planning Commission	1
(b) National Transportation Safety Board, Department of Transportation	3
(c) Federal Railroad Administration, Department of Transportation	3
(d) Federal Highway Administration, Department of Transportation	1, 3
(e) Federal Aviation Administration, Department of Transportation	1
(f) Federal Housing Administration, Housing and Urban Development	2
(g) Office of Urban Technology and Research, Housing and Urban Development	1
(h) Model Cities Administration, Housing and Urban Development	1
(i) Office of Intergovernmental Relations and Planning Assistance, Housing and Urban Development	1
(j) Department of Commerce, Economic Development Administration	1
2. Urban redevelopment:	
(a) Office of Urban Technology and Research, Housing and Urban Development	3
(b) Model Cities Administration, Housing and Urban Development	1
(c) Housing Assistance Administration, Housing and Urban Development	1
(d) Renewal Assistance Administration, Housing and Urban Development	1
(e) Economic Development Administration, Department of Commerce	2
3. Urban public recreation:	
(a) National Capital Planning Commission	1
(b) Land and Facilities Development Administration, Housing and Urban Development	1
(c) Renewal Assistance Administration, Housing and Urban Development	1
4. Utility engineering and construction:	
(a) Federal Railroad Administration, Department of Transportation	3
(b) Federal Water Pollution Control Administration, Department of the Interior	1, 3
(c) Office of Intergovernmental Relations and Planning Assistance, Housing and Urban Development	1
(d) Land and Facilities Development Administration, Housing and Urban Development	1

	Implications
A. Urban land utilization—Continued	
5. Zoning:	
(none).	
B. Nonurban-land utilization:	
1. Surveying and mapping:	
(*a*) National Aeronautics and Space Administration	1
(*b*) Geological Survey, Department of the Interior	1
2. Rural community stabilization, planning, and development:	
(*a*) Tennessee Valley Authority	1
(*b*) Appalachian Regional Commission	1
(*c*) Bureau of Reclamation, Department of the Interior	3
(*d*) Bureau of Indian Affairs, Department of the Interior	1
(*e*) Federal Housing Administration, Housing and Urban Development	2
(*f*) Office of Urban Technology and Research, Housing and Urban Development	3
(*g*) Model Cities Administration, Housing and Urban Development	1
(*h*) Economic Development Administration, Department of Commerce	1, 2
(*i*) Farmers Home Administration, Department of Agriculture	1, 2
(*j*) Rural Electric Administration, Department of Agriculture	1
(*k*) Commodity Credit Corporation, Department of Agriculture	2, 3
(*l*) Rural Community Development Service, Department of Agriculture	1
(*m*) Farmer Cooperative Service, Department of Agriculture	1, 3
3. New city planning and development:	
(*a*) Federal Railroad Administration, Department of Transportation	3
(*b*) Geological Survey, Department of the Interior	1
(*c*) Federal Housing Administration, Housing and Urban Development	2
(*d*) Model Cities Administration, Housing and Urban Development	1
(*e*) Economic Development Administration, Department of Commerce	1
C. Transportation:	
1. Urban transit planning and development:	
(*a*) National Transportation Safety Board, Department of Transportation	3
(*b*) Federal Railroad Administration, Department of Transportation	3
(*c*) Federal Highway Administration, Department of Transportation	1, 3
(*d*) Urban Transportation Administration, Housing and Urban Development	1
(*e*) Transportation Research (Secretary's Office), Department of Transportation	3
2. Highway planning, safety, and beautification:	
(*a*) National Transportation Safety Board, Department of Transportation	1, 3
(*b*) Transportation Research (Secretary's Office), Department of Transportation	3
3. Air transport planning and development:	
(*a*) Civil Aeronautics Board	2
(*b*) National Aeronautics and Space Administration	3
(*c*) National Transportation Safety Board, Department of Transportation	1, 3
(*d*) Federal Aviation Administration, Department of Transportation	1, 3
(*e*) Procurement and Research Development. Department of Defense	2
(*f*) Transportation Research (Secretary's Office), Department of Transportation	3

C. Transportation—Continued	*Implications*
4. Marine and inland waterway transport planning and development:	
(*a*) Water Resources Council	3
(*b*) Tennessee Valley Authority	1
(*c*) National Transportation Safety Board, Department of Tranpsortation	1, 3
(*d*) U.S. Coast Guard, Department of Transportation	1
(*e*) Corps of Engineers, Department of Defense	1, 3
(*f*) Transportation Research (Secretary's Office), Department of Transportation	3
5. Traffic control safety:	
(*a*) National Transportation Safety Board, Department of Transportation	1, 3
(*b*) Federal Highway Administration, Department of Transportation	1, 3
(*c*) Transportation Research (Secretary's Office), Department of Transportation	3
6. Railroad regulation and safety:	
(*a*) National Transportation Safety Board, Department of Transportation	1, 2
(*b*) Bureau of Railroad Safety (Federal Railroad Administration), Department of Transportation	1
D. Energy:	
1. Thermal-electric plant siting, design, and operation:	
(*a*) Tennessee Valley Authority	1
(*b*) Federal Power Commission	2
(*c*) Atomic Energy Commission	1, 3
(*d*) Rural Electrification Administration, Department of Agriculture	1
2. Electric power transmission line siting, design, construction and operation:	
(*a*) Tennessee Valley Authority	1
(*b*) Federal Power Commission	2
(*c*) Bonneville Power Administration, Department of Interior	1
(*d*) Southeastern Power Administration, Department of Interior	1
(*e*) Southwestern Power Administration, Department of Interior	1
(*f*) Bureau of Reclamation, Department of Interior	1, 3
(*g*) Rural Electrical Administration, Department of Agriculture	1
3. Fossil fuel exploration, inventory, and research:	
(*a*) Office of Oil and Gas, Department of Interior	1, 3
(*b*) Office of Coal Research, Department of Interior	3
(*c*) Bureau of Mines, Department of Interior	1, 3
(*d*) Geological Survey, Department of Interior	1, 2
(*e*) Defense Supply Agency and military departments, Department of Defense	2
4. Heat utilization and dispersion:	
(*a*) Federal Power Commission	2
(*b*) Atomic Energy Commission	1, 3
(*c*) Office of Coal Research, Department of Interior	3
5. Nuclear power research, development, and operation:	
(*a*) Tennessee Valley Authority	1
(*b*) Federal Power Commission	2
(*c*) Atomic Energy Commission	1, 2, 3
(*d*) Defense Supply Agency and military departments, Department of Defense	2
6. Hydroelectric power research, development, and operation:	
(*a*) Water Resources Council	3
(*b*) Tennessee Valley Authority	1
(*c*) Federal Power Commission	2
(*d*) Bonneville Power Administration, Southeastern Power Administration, Southwestern Power Administration, Department of Interior	1
(*e*) Bureau of Reclamation, Department of Interior	1, 3
(*f*) Corps of Engineers, Department of Defense	1

	Implications
E. Mineral resources conservation:	
1. Mineral exploration and inventory:	
(*a*) Tennessee Valley Authority	1
(*b*) Atomic Energy Commission	1, 2
(*c*) Bureau of Mines, Department of Interior	1, 3
(*d*) Geological Survey, Department of Interior	1, 3
(*e*) Defense Supply Agency and military departments, Department of Defense	2
2. Materials research and development:	
(*a*) Tennessee Valley Authority	1
(*b*) Atomic Energy Commission	1, 3
(*c*) Bureau of Mines, Department of Interior	1, 3
(*d*) Research and Development, Department of Defense	2
(*e*) Defense Supply Agency and military department, Department of Defense	2
3. Solid waste storage, recycling, and disposal:	
(*a*) Bureau of Mines, Department of Interior	3
4. Mining technology research, and development:	
(*a*) Tennessee Valley Authority	1
(*b*) Office of Coal Research, Department of Interior	3
(*c*) Bureau of Mines, Department of Interior	1, 3
(*d*) Bureau of Outdoor Recreation, Department of Interior	1
5. Mineral extraction research and development:	
(*a*) Tennessee Valley Authority	1
(*b*) Office of Coal Research, Department of Interior	1, 3

III. ENVIRONMENTAL HEALTH AND WELL-BEING

A. Physiological health and well-being:	
1. Sanitation:	
(*a*) Federal Water Pollution Control Administration, Department of Interior	1, 3
(*b*) Public Health Service, Health, Education, and Welfare	1
(*c*) Environmental Science Services Administration, Department of Commerce	1
2. Radiation control:	
(*a*) Federal Radiation Council	1
(*b*) Atomic Energy Commission	1, 3
(*c*) International Organizations and Conferences, Department of State	2
(*d*) Public Health Service, Health, Education, and Welfare	1, 3
(*e*) Office of Civil Defense, Department of Defense	2
3. Industrial and domestic health and safety:	
(*a*) U.S. Coast Guard, Department of Transportation	1
(*b*) Bureau of Mines, Department of Interior	1, 3
(*c*) Public Health Service, Health, Education, and Welfare	2, 3
(*d*) Farmers Home Administration, Department of Agriculture	1
(*e*) Consumer and Marketing Service, Department of Agriculture	2
4. Environmental health protection:	
(*a*) Federal Water Pollution Control Administration, Department of Interior	3
(*b*) Public Health Service, Health, Education, and Welfare	1, 3
(*c*) Office of Civil Defense, Department of Defense	2
5. Contagious disease control:	
(*a*) Public Health Service, Health, Education, and Welfare	2, 3
6. Pest control:	
(*a*) Bureau of Sport Fisheries and Wildlife, Department of Interior	1, 3
(*b*) Agricultural Research Service, Department of Agriculture	1
7. Food and drug regulation:	
(*a*) Bureau of Narcotics, Treasury Department	2
(*b*) Food and Drug Administration, Health, Education, and Welfare	1, 3
(*c*) Consumer and Marketing Service, Department of Agriculture	1

	Implications
A. Physiological health and well-being—Continued	
8. Flood control:	
(*a*) Tennessee Valley Authority	1
(*b*) Bureau of Reclamation, Department of Interior	1, 3
(*c*) Corps of Engineers, Department of Defense	1, 3
(*d*) Farmers Home Administration, Department of Agriculture	2
(*e*) Soil Conservation Service, Department of Agriculture	1
9. Natural disaster warning and relief:	
(*a*) Small Business Administration	1
(*b*) U.S. Coast Guard, Department of Transportation	1
(*c*) Bureau of Commercial Fisheries, Department of Interior	1
(*d*) Public Health Service, Health, Education, and Welfare	1
(*e*) Corps of Engineers, Department of Defense	1
(*f*) Environmental Science Services Administration, Department of Commerce	1
(*g*) Federal Crop Insurance Corporation, Department of Agriculture	1
(*h*) Agricultural Stabilization and Conservation Service, Department of Agriculture	1
10. Population control:	
(*a*) Bureau of Census, Department of Commerce	3
B. Psychological health and well-being:	
1. Noise suppression:	
(*a*) Federal Aviation Administration, Department of Transportation	1, 3
2. Relief of acoustic, mechanical, and interpersonal tension stresses:	
(*a*) Federal Communications Commission	2
(*b*) Federal Railroad Administration, Department of Transportation	3
(*c*) Federal Highway Administration, Department of Transportation	1
(*d*) Federal Aviation Administration, Department of Transtation	1, 3
(*e*) Land and Facilities Development Administration, Housing and Urban Development	1
3. Promotion of community identity:	
(*a*) Federal Housing Administration, Housing and Urban Development	2
(*b*) Office of Community Development, Housing and Urban Development	1
4. Population dispersion:	
(*a*) Federal Railroad Administration, Department of Transportation	1
(*b*) Federal Housing Administration, Housing and Urban Development	2
5. Environmental education:	
(*a*) Smithsonian Institution	1
(*b*) International Ogranization and Conferences, Department of State	1
(*c*) Office of Water Resources Research, Department of Interior	1
(*d*) Federal Water Pollution Control Administration, Department of Interior	1
(*e*) Office of Information, Department of Agriculture	1, 3
IV. PROMOTION OF AMENITIES	
A. Outdoor recreation:	
1. Public recreation planning and development:	
(*a*) Water Resources Council	3
(*b*) Tennessee Valley Authority	1
(*c*) U.S. Coast Guard, Department of Transportation	1
(*d*) Federal Water Pollution Control Administration, Department of Interior	1
(*e*) Bureau of Reclamation, Department of Interior	1

	Implications
A. Outdoor recreation—Continued	
1. Public recreational planning and development—Continued	
(*f*) National Park Service, Department of Interior	1
(*g*) Bureau of Sport Fisheries and Wildlife, Department of Interior	1
(*h*) Bureau of Outdoor Recreation, Department of Interior	1
(*i*) Bureau of Indian Affairs, Department of Interior	1
(*j*) Bureau of Land Management, Department of Interior	1
(*k*) Corps of Engineers, Department of Defense	1, 3
(*l*) Agricultural Stabilization and Conservation Service, Department of Agriculture	1
2. Wild lands preservation:	
(*a*) National Park Service, Department of Interior	1
(*b*) Bureau of Sport Fisheries and Wildlife, Department of Interior	1
(*c*) Bureau of Outdoor Recreation, Department of Interior	1
3. Sport fish and wildlife conservation:	
(*a*) Tennessee Valley Authority	1
(*b*) Bureau of Reclamation, Department of Interior	1
(*c*) Bureau of Sport Fisheries and Wildlife, Department of Interior	1, 3
(*d*) Agricultural Stabilization and Conservation Service, Department of Agriculture	1
4. Conservation and promotion of natural beauty:	
(*a*) Tennessee Valley Authority	1
(*b*) Bureau of Outdoor Recreation, Department of Interior	1
(*c*) National Park Service, Department of Interior	1
(*d*) Bureau of Indian Affairs, Department of Interior	1
(*e*) Bureau of Land Management, Department of Interior	1
B. Cultural stimulation:	
1. Urban beautification:	
(*a*) National Capital Planning Commission	1
(*b*) Office of Urban Technology and Research, Housing and Urban Development	3
(*c*) Model Cities Administration, Housing and Urban Development	1
(*d*) Land and Facilities Development Administration, Housing and Urban Development	1
(*e*) Renewal Assistance Administration, Housing and Urban Development	1
2. Historic preservation:	
(*a*) Tennessee Valley Authority	1
(*b*) National Capital Planning Commission	1
(*c*) Historical and memorial commissions	1
(*d*) National Park Service, Department of Interior	1
(*e*) Land and Facilities Development Administration, Housing and Urban Development	1
(*f*) Renewal Assistance Administration, Housing and Urban Development	1
(*g*) Housing Assistance Administration, Housing and Urban Development	1
3. Enhancement of architectural and engineering design:	
(*a*) Federal Highway Administration, Department of Transportation	1
(*b*) Bureau of Reclamation, Department of Interior	1
(*c*) National Park Service, Department of Interior	1
4. Maintenance of continuity of environmental associations:	
(*a*) Bureau of Sport Fisheries and Wildlife, Department of Interior	1, 3
(*b*) National Park Service, Department of Interior	1
(*c*) Bureau of Outdoor Recreation, Department of Interior	1
(*d*) Bureau of Land Management, Department of Interior	1
(*e*) Model Cities Administration, Housing and Urban Development	1

	Implications
5. Provision for diversity of experience and life style:	
(*a*) Tennessee Valley Authority	1
(*b*) National Park Service, Department of Interior	1
(*c*) Bureau of Sport Fisheries and Wildlife, Department of Interior	1
(*d*) Bureau of Outdoor Recreation, Department of Interior	1
(*e*) Bureau of Land Management, Department of Interior	1

V. ECOLOGICAL RESEARCH

A. Human ecology:	
1. Basic research in human ecology:	
(*a*) Smithsonian Institution	1
(*b*) National Science Foundation	1
(*c*) Appalachian Regional Commission	2
(*d*) Federal Field Committee for Development Planning in Alaska	2
(*e*) National Aeronautics and Space Administration	3
(*f*) Atomic Energy Commission	3
(*g*) International Organization and Conferences, Department of State	3
(*h*) Bureau of Labor Statistics, Department of Labor	3
(*i*) Geological Survey, Department of Interior	3
(*j*) Office of Territories, Department of Interior	2
(*k*) Public Health Service, Health, Education, and Welfare	3
(*l*) Research and Development, Department of Defense	2
(*m*) National Bureau of Standards	3
(*n*) Environmental Science Services Administration, Department of Commerce	3
(*o*) Bureau of the Census, Department of Commerce	3

BIBLIOGRAPHY

NOTE.—Those sources which are marked by asterisk were screened for indicator words and phrases as part of the analysis leading to the environmental activity classification system developed in this paper.

A. BOOKS

Commoner, Barry. *Science and Survival.* New York: The Viking Press, 1963. 150 pp.

A popularly written exposition of the impact of technology on the environment, with numerous examples

Ewald, William R., Jr. (ed.). *Environment for Man: The Next Fifty Years.* Bloomington: Indiana University Press, 1967. 308 pp.

A collection of essays on environmental planning for the future.

Sax, Joseph L. *Water Law, Planning and Policy: Cases and Materials.* New York: Bobbs-Merrill Company, Inc., 1968. 520 pp.

A book of legal case materials for water resource law courses, including descriptive background on many recent resource development controversies.

With Heritage So Rich. A report of a Special Committee on Historic Preservation under the auspices of the United States Conference of Mayors. New York: Random House, 1966. 230 pp.

A pictorial essay which expresses the viewpoint of environmental esthetic enhancement, especially with regard to historic sites.

B. GOVERNMENT PUBLICATIONS

The Budget of the United States Government: Fiscal Year 1969. Washington: Government Printing Office, 1968. 556 pp., with appendix.

National Science Foundation. *Weather Modification: Ninth Annual Report 1967.* Washington: Government Printing Office, 1968. 101 pp.

A report on the current status of Federal programs concerning weather modification.

Office of Economic Opportunity. *Catalog of Federal Assistance Programs.* Washington: Government Printing Office, 1967. 701 pp.

A compendium of Federal assistance programs of all types with cross-referenced indexes, program descriptions, and citations to enabling acts.

*The President's Council on Recreation and Natural Beauty. *From Sea to Shining Sea.* Washington: Government Printing Office, 1968. 304 pp.

A discussion of current environmental problems and applicable Federal and State programs. Emphasis on urban problems and outdoor recreation.

President's Science Advisory Committee. *Restoring the Quality of Our Environment.* Washington: Government Printing Office, 1965. 317 pp.

A report on air, water, and soil pollution problems with recommendations for Federal action.

United States Congress, Joint Economic Committee. *Federal Programs for the Development of Human Resources.* A compendium of papers submitted to Subcommittee, 90th Congress, 2d Session. Washington: Government Printing Office, 1968. 684 pp.

A collection of papers in five volumes including material on health, housing, and environmental quality.

*United States Congress, *Joint House-Senate Colloquium to Discuss a National Policy for the Environment.* Hearing before the Senate Committee on Interior and Insular Affairs and House Committee on Science and Astronautics, 90th Congress, 2d Session. Washington: Government Printing Office, 1968. 233 pp.

A hearing transcript including recent statements and papers by prominent Federal and non-Federal commentators on environmental management.

United States General Services Administration. *United States Government Organization Manual, 1968–69.* Washington: Government Printing Office, 1968. 842 pp.

United States Department of Health, Education, and Welfare. *A Strategy for a Livable Environment.* Washington: Government Printing Office, 1967. 90 pp.

A task force report on environmental health problems with recommendations concerning air and water pollution, waste disposal, urban stress, consumer protection, radiation hazards, and occupational hazards.

*United States Department of the Interior. *Quest for Quality.* Washington: Government Printing Office, 1965. 96 pp.

A yearbook having special reference to environmental quality as it is related to the Department's programs.

*———. *The Population Challenge.* Washington: Government Printing Office, 1966. 80 pp.

A yearbook relating the Department's programs to population pressures and environmental quality.

*———. *The Third Wave.* Washington: Government Printing Office, 1967. 128 pp.

A yearbook describing the modern conservation programs of the Department.

*———. *Man—an Endangered Species?* Washington: Government Printing Office, 1968. 100 pp.

A yearbook placing emphasis on ecological impact of the Department's programs.

———. *Surface Mining and Our Environment.* Washington: Government Printing Office, 1967. 124 pp.

A report on strip mining by a departmental policy committee.

C. Miscellaneous Publications

*The Aspen Center for Environmental Studies. *Summary of Proceedings: Seminar on Environmental Arts and Sciences.* Boulder, Colorado: Thorne Ecological Foundation, 1967. 24 pp.

An interesting set of papers expressing the viewpoint of private conservationists on ecological preservation.

**The Electric Utility Industry and the Environment.* A report to the Citizens Advisory Committee on Recreation and Natural Beauty. Privately printed by the Electric Utility Task Force on the Environment, 1967. 105 pp.

An industry-oriented discussion of environmental quality, primarily urban area problems.

*National Academy of Sciences. *Waste Management and Control.* Washington: National Academy of Sciences, 1966. 257 pp.

A report on air, water, and land pollution with discussion of the problem, current legal, technical, and institutional constraints, and proposed approaches.

Nicholson, E. M. and A. W. Colling. *Chart of Human Impacts on the Countryside.* London: Secretariat, The Countryside in 1960 Study Conference, 1963. 51 pp.

A chart form of classification intended to display human activities which have environmental impact, along with the nature, time, and agencies interested in the impact.

D. Bibliographies

Ottersen, Signe Ruh. *Readings on Natural Beauty: A Selected Bibliography.* Washington: United States Department of the Interior, 1967.

E. Periodicals

Nelson, Bryce. "Congress: Toward a National Policy for the Environment," *Science,* Vol. 161, No. 3840, August 2, 1968, pp. 445–446.

A commentary on the joint House-Senate colloquium on environmental policy.

*"Outlook: Status of Environmental Quality Legislation Measures," *Environmental Science and Technology,* Vol. 2, No. 10, October, 1968, pp. 755–758.

A discussion of legislation in the 90th Congress on pollution control and other environmental issues.

F. Unpublished Materials

*Edwards, Max N. "Challenge for a Better Environment." Paper read before the Fontana Conservation Roundup, Fontana, North Carolina, May 17, 1968.
A discussion of environmental policy and problems by the Assistant Secretary of the Interior for Water Pollution Control.

*Hummel, Don. "Engineer's Role in Socio-Economic Development of Cities." Speech before the National Society of Professional Engineers, Phoenix, Arizona, October 10, 1968.
A discussion of technological approaches to urban' environmental quality.

G. Other Sources

This material was further amplified by personal discussions between the author and Mr. William Van Ness, Special Counsel, Senate Interior Committee; Mr. Wallace E. Bowman, Legislative Reference Service, Library of Congress; Prof. Lynton K. Caldwell, Indiana University; and various officials of the Office of Science and Technology and the Department of the Interior.